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Development and Validation of Filipino Learners' Academic Resilience Scale

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ABSTRACT

Academic resilience can lead to better behavior and results for disadvantaged learners since they can achieve good educational outcomes despite diversity. Several studies mentioned that various protective factors could affect resilience among students. On the other hand, several risk factors also directly affect its development among learners. This research provides a scholarly source for developing a scale that determines the level of academic resiliency of selected secondary school students and describes its psychometric features. The preliminary items for the scale were drafted based on the literature review and personal interviews using open-ended questions with secondary school students in Bulacan. The interview questions were based on the risk and protective factors for academic resilience suggested by Kutlu and Yavuz (2016). The scale used a four-point Likert scale, with higher scores indicating greater academic resilience. After validating the preliminary scale, the researcher analyzed the validity and reliability of the new scale items among 591 students. Using exploratory factor analyses, two primary factors were extracted – internal and external protective factors - with 37 items for FLARS. Several well-recognized criteria for the factorability of a correlation were used. The Kaiser-Meyer-Olkin measure of sampling adequacy was .915, above the commonly recommended value of .6, and Bartlett's test of sphericity was significant ($X^2(666) = 7351.246, p < .05$). Also, the overall Cronbach's alpha was .901, which showed very high reliability. Therefore, the FLARS instrument is reliable and valid. It can measure the level of academic resilience of secondary school students. However, it might be readministered to a bigger sample for greater reliability, validity, and generalizability of results.

INTRODUCTION

When the COVID-19 pandemic started in 2019, schools were forced to close and shift to remote learning modalities to avoid learning loss for current learners. However, international evidence from past health and disaster-linked emergencies confirmed that the effect goes further than the period of pandemic or disaster (Cho, Kataoka, and Piza, 2021). Consequently, school closures come at the expense of learning. With the shifting of learning modalities from face-to-face to online, many learners experienced stress and fatigue because they were not used to the new learning modality. Also, the online learning modality inhibited them from in-person interactions with their peers, resulting in isolation and anxiety, affecting the learning process. This situation could significantly affect everyone in the education sector, especially the learners. To name some effects of this pandemic, learning loss is one of them. Learning losses can diminish the affected students' potential productivity and lifetime earnings. The projected value of these losses at 1.25 trillion dollars for developing Asia is comparable to 5.4% of the region's 2020 gross domestic product (Gayares, 2021). In the Philippines, the National Economic Development Authority (NEDA) estimated that the learning loss could lead to a pandemic cost of productivity of 41.4 trillion pesos for the next 40 years (National Economic and Development Authority, 2021). Hence, high students' academic resiliency must address this health crisis challenge (Riopel, 2021).

With this, it is about time to develop and validate a tool

that measures the academic resilience of Filipino learners so that prompt solutions can be done after the assessment to alleviate the deteriorating effects of this challenging situation. For this purpose, the researcher addresses the following research questions below.

1. What are the reliability test findings of the 'Filipino Learners' Academic Resilience Scale (FLARS)?
2. What are the factor analysis outcomes of the 'Filipino Learners' Academic Resilience Scale (FLARS)?

LITERATURE REVIEW

In psychiatry, resilience is understood and defined as positive adaptation, or the capacity to maintain or regain mental health, despite adversity. The personal, biological, and environmental or systemic causes of resilience and their interactions are significant factors (Herrman, Stewart, Granados, Berger, Jackson, and Yuen, 2017). As for academic resilience, Jowkar, Kojuri, Kohoulat, and Hayat (2019) described it as the intensified chance of success in school despite environmental adversities brought about by early traits, conditions, and experiences. In other words, resilient students maintain high levels of achievement, motivation, and performance even with stressful events and situations that place them at risk of doing poorly in school and, in due course, dropping out of school. So, the role of motivation may be essential to educational resilience. Also, learners' motivation is necessary for academic success; students' academic gains can be gone if they are not resilient to obstacles, learning pressure, and stress in school. Therefore, students must

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be motivated and resilient to academic pressures (Martin, 2001).

A plethora of international studies explains other factors affecting learners' academic resilience. These include student immigration (Peña, Jones, Orange, Simieou, and Márquez, 2018; Cumby, 2018; Gabrielli *et al.*, 2021), and curriculum (Agasisti, Avvisati, Borgonovi, and Longobardi, 2018; Kemp, Palmer, and Strelan, 2019).

According to Peña, Jones, Orange, Simieou, and Márquez (2018), the major influential factors for academic resilience are life experiences, school structure, culture, and climate. These external factors are contributory to boosting one's self-efficacy and self-esteem. Comparatively, Cumby (2018) suggested that an effective play of external factors (familial and social capital) in influencing the internal factors (linguistic, aspirational, and navigational capital) of resilience can create an opportunity of building a more mature academic resilience among immigrant learners. Lastly, Gabrielli *et al.*, (2021) conformed to those self-efficacy principles, encouraging a home atmosphere and language approaches to support good academic regulations among immigrant-origin students. Likewise, to better academic resilience, schools should foster inclusive programs such as extra-curricular activities to develop resilience further.

Based on Agasisti *et al.*, (2018), curriculum plays a vital role in academic resilience. It should be crafted based on students' abilities and beliefs. Likewise, it should guide their success in school while promoting self-efficacy and autonomy. Thus, the learners feel confident and believe things will work in the end. Similarly, Kemp *et al.*, (2019) highlighted the role of technology in driving academic resilience among students in school. Incorporating technology into the curriculum revolutionizes the learning process, thus providing learning opportunities to become more resilient individuals. Hence, both curriculum and technology play a crucial role in guiding learners; academic resilience. Experts must be knowledgeable enough in navigating its strengths to achieve the primary purpose of improving learning outcomes.

To support this scale development, local studies being published were also reviewed. Seemingly, the most identified factors influencing academic resilience among learners are school culture and environment (Lanuza *et al.*, 2020; Edara *et al.*, 2021) and family and community (Rico, 2019; Beri & Dorji, 2021; Palmes *et al.*, 2021).

Lanuza *et al.*, (2020) stated that religiosity is mediated by the effects of resilience, optimism, and well-being. This result suggested that while facing harsh conditions in life, the educators in the Philippines might use religiosity and its related dimensions as positive coping mechanisms to face the academic challenges triggered by the COVID-19 pandemic. With this behavior, resilience among teachers can also be transpired to their learners since they can be behavior models. Similarly, Edara *et al.*, (2021) noted that a contextualized and comprehensive program could lessen the risk factors brought by adversities since they can quickly grasp the concepts and learn them, thus, allowing

an opportunity to be resilient. Therefore, an effective curriculum and self-regulated teachers are scaffolds to having academically resilient learners.

In the same manner, Beri and Dorji (2021) assessed that resilient plays a meaningful part in coping with stress and has a significant influence on academic success and behaved both as a mediator and moderator in the association between stressors and psychological well-being; hence, a positive attitude and emotion of a learner can improve learning efficacy. Correspondingly, Palmes *et al.*, (2021) proved the role of resilience in enhancing the quality of life (QOL) using structural equation modeling. Results show that coping strategies only are not sufficient to improve QOL. The only means to develop QOL are resiliency and the ability to participate in social endeavors. Therefore, the partnership between schools- the foundation of necessary knowledge and behavior development ground- and the communities- the basis of the distinctiveness of individuals and groups- is a valuable way of fostering resilience among people (Rico, 2019).

With this empirical literature, the significance of academic resilience has been established. Thus, it is vital to determine the level of academic resilience among learners experiencing the adversities brought by the pandemic. More studies on academic resilience were done internationally. A scale development study by Kutlu and Yavuz (2016) identified two protective factors of academic resilience among academicians – internal and external. The internal or personal protective factors mean dominant attitudes, values, and norms prohibiting suicide, including solid beliefs about life's meaning and significance. Alternatively, the external or environmental protective factors mean solid relationships, mainly with family members, chances to partake in and contribute to the school or community projects and activities, a reasonably safe and stable environment, restricted access to lethal means, and responsibilities and duties to others. With vast tools and instruments on resilience being developed in other countries, none has been developed locally that Filipino learners would use locally.

Furthermore, this study aims to develop a localized and contextualized scale that determines the level of academic resiliency of selected secondary school students and describes its psychometric features. Moreover, the number of factors on this scale – internal and external protective factors, was based on the study of Kutlu and Yavuz (2016).

METHODS

This study followed exploratory mixed (qualitative and quantitative) methods. A qualitative methodology was employed in scale development, while the quantitative method was used in instrument validation.

Scale Development

At the start of developing the instrument, the researcher tediously reviewed existing studies and literature about academic resilience. In doing this, an operational

definition of academic resilience was made: “strengthened likelihood of students to be successful in school even they experience personal or environmental difficulties”. Also, the researcher determined two factors or domains for the said construct as suggested by existing studies – internal and external protective factors as suggested by the study of Kutlu and Yavuz (2016).

To start the item development process, the researcher created open-ended questions that were answered by ten selected secondary school students in Bulacan via Google forms due to the limitations brought by the pandemic. The said questions were validated by expired and were translated into the Filipino language to ensure that the participants could easily understand them. These are the open-ended questions:

1. Does this pandemic become a challenge to you as a student? If yes, what makes you say so? (*Naging mapaghamon ba sa iyo ang pandemya bilang estudyante? Kung oo, anong dahilan bakit mo nasabi ‘yun?*)

2. Is there anything you did to overcome the challenges brought by this difficult situation? If yes, what are those things? (*May ginawa ka bang anumang bagay upang malagpasan ang mapaghamong dulot ng lubhang hirap na sitwasyon? Kung oo, ano ang mga bagay na iyon?*)

3. Is there someone or something that enabled you to overcome these challenges? If yes, what did they do? (*Mayroon bang kabiti na sino o bagay kaya ang tumulong upang iyong paganahing malagpasan ang mga hamong ito? Kung mayroon o oo, anong ginawa nila?*)

Once the students were finished answering the questions, the researcher conducted an in-depth interview using an interview guide on four students from the group. The data from these interviews were content analyzed, and codes and categories were generated. An intercoder was asked to validate the codes made by the researcher for reliability purposes. Then, the preliminary items for the scale were made based on the themes that arose in the students’ responses. There were 17 items created for the internal or personal protective factors and 20 items for

the external or environmental protective factors. These 37 items initially developed underwent language and expert validation.

For language validation, the researcher asked an English teacher with a master’s degree in language education to investigate each item’s grammar and other language components. Then, experts examined the items and decided if they were intended to measure academic resilience. After this process, no items were removed or added.

The survey instrument is a 4-point Likert scale that specifies the respondents’ level of agreement to a statement typically in four points: 4 - Strongly agree, 3 - Agree, 2 - Disagree, and 1 - Strongly disagree. The neutral midpoint was removed to avoid respondents using it as a dumping ground when responding to survey items unfamiliar to them, ambiguous or socially undesirable items.

Before administering the preliminary items, a teacher who is an expert in Filipino and is currently taking her master’s program at UP College of Education was asked to translate each item into Filipino. This translation was made and decided on by the researcher for easy understanding by respondents during the implementation. The researcher secured approval to administer the survey instrument from the school heads of selected secondary schools in the Philippines. Students in secondary school (from Grades 7 to 12) took part in the scale administration. However, due to the current pandemic, the respondents answered the survey via Google forms.

There was a total of 591 students who answered the survey. They came from the following regions in the Philippines: Central Luzon (N=385), Northern Mindanao (N=108), Western Visayas (N=57), National Capital Region (N=23), Bicol Region (N=11), Davao Region (N=4), and CALABARZON (N=3). Table 1 shows the demographic profile and frequency of the respondents who joined in administering the preliminary items of the scale.

Table 1: Demographic information of the respondents

Grade Level	Male	Female	N	%
7	34	40	74	12.5
8	13	32	45	7.6
9	62	72	134	22.7
10	43	86	129	21.8
11	33	68	101	17.1
12	42	66	108	18.3
Total	227	364	591	100

Based on table 1, most of the respondents are female, N=364 (61.59%); thus, there is an instance that the reflection of academic resilience will come from female students.

Moreover, among the junior and senior high school students, most of the respondents are junior high school students, N=382 (64.64%); therefore, the instrument will indicate the academic resilience of junior high school students more.

Instrument Psychometric Analyses

The following psychometric analyses were employed in developing Filipino Learners’ Academic Resilience Scale (FLARS), such as reliability and validity.

Instrument Reliability

Cronbach’s alpha is a gauge of internal consistency: how directly associated a set of items are as a group. It is believed to be a measure of scale reliability. The

reliability values can be influenced by external factors - respondents' age, gender, level of study, religiousness, rural/urban living, survey type, and relevance of the research subject for the survey participants (Ursachi *et al.*, 2015). In developing this scale, data are examined for internal consistency using an alpha coefficient, a test of item inter-correlation. A high alpha suggests that each item is a good indicator of the other items. When instruments are used for research reasons, alphas should be 0.70 to 0.80. For clinical functions, alphas should be at least 0.90 (Taber, 2018).

Scale Validity

Factor analysis is an approach to getting a load of data and summarizing it into a smaller data set that is more convenient and more plausible. Factors are recorded corresponding to factor loadings, or how much difference in the data they can explain. It is utilized to ascertain the association between the variable and the respondent (Samuels, 2017). Also, Exploratory factor analysis (EFA) is commonly used to determine the factor structure

of a measure and analyze its internal reliability. EFA is necessary to establish underlying constructs for a set of measured variables (Watkins, 2018).

RESULTS AND DISCUSSION

In this section, qualitative and quantitative results are presented and discussed. The qualitative results cover the themes and codes generated from the transcripts of the semi-structured interviews conducted before item development. Likewise, quantitative results include the reliability and validity analyses of the data gathered from the survey administration.

Risk and Protective Factors of Academically Resilient Learners

Risk Factors

Results concerning the first question, "Does this pandemic become a challenge to you as a student? If yes, what makes you say so?" aimed to identify the obstacles and challenges faced by the students during this challenging time, are shown in Table 2.

Table 2: Risk factors encountered by academically resilient learners

Risk factors	Codes	Frequency
Environmental-related	Not accustomed to learning modality	5
	Inconducive learning environment	2
	Inadequate	2
	More responsibilities time allotment	1
	School-related task overload	1
Personal-related	Emotional difficulty	1
	Becoming socially distant	1
	Afraid of being criticized	1
	Physical exhaustion	1
	Absenteeism	1
	Unmotivated	1
Financial and Resources-related	Low income	1
	Doing extra job	1
	Limited educational resources	1
	Financially demanding	1

According to Table 2, the risk factors students face the most are environmental-related, while the risk factors they face least are financial and resource-related. Accordingly, results show that the risks students face during the pandemic are mainly from the learning modality, non-conducive learning environment, and more home and school workloads.

As seen in Table 2, students have been exposed to at least one or several stated risk factors since the pandemic started. These risk factors were the basis for determining the protective factors of learners during the pandemic. The environmental, financial, and resource-related risk factors are the basis for the external protective factors, while personal-related risk factors are the basis for the internal protective factors.

Internal or Personal Protective Factors

Outcomes about the second question, "Is there anything you did to overcome the challenges brought by this

difficult situation? If yes, what are those things?" directed at learners are presented in Table 3.

Corresponding to Table 3, internal or personal protective factors (managing stress, sense of responsibility, positive mindset, having habits, intrinsic motivation, looking for other options, self-control, having an alone time, time management, perseverance, considers education as salvation, and being determined) which played the most significant role in students' academic resilience are: managing stress, a sense of responsibility, and having a positive mindset.

External Protective Factors

The third question directed to the students was, "Is there someone or something that enabled you to overcome these challenges? If yes, what did they do?" The findings regarding the question are shown in Table 4.

According to Table 4, among external protective factors (family support, encouragement of a friend,

Table 3: Internal or personal protective factors faced by academically resilient learners

Codes	Frequency
Managing stress	3
Sense of responsibility	3
Positive mindset	3
Having habits	2
Intrinsic motivation	2
Looking for other options	1
Self-control	1
Having an alone time	1
Time management	1
Perseverance	1
Considers education as salvation	1
Being determined	1
Doing extra job	1
Limited educational resources	1
Financially demanding	1

Table 4: External or environmental protective factors faced by academically resilient learners

Codes	Frequency
Family support	4
Encouragement of a friend	3
Family guidance	2
Encouragement from family	2
Friend support	2
Idolizing someone	2
Strong faith in God	2
Family as an inspiration	1
Friend as an inspiration	1
Teacher support	1

family guidance, encouragement from family, friend support, idolizing someone, strong faith in god, family as an inspiration, friend as an inspiration, and teacher support) that students appeal to are “Family support” and “Encouragement of a friend” subjects contribute the most as external protective factors. Thus, they become academically resilient, rooted in family and friends as external factors.

Cronbach’s Alpha

Table 5 presents the reliability analysis of the instrument “Filipino Learners’ Academic Resilience Scale (FLARS)”. The overall and subscale Cronbach’s alpha was computed, and its descriptive statistics.

Based on the reliability coefficients of FLARS in Table 4, the Internal Protective Factors subscale consisted of 17 items ($\alpha = .823$), the External Protective Factors, consisted

Table 5: Reliability and descriptive statistics results of FLARS

Subscale	N	Mean	SD	Cronbach’s Alpha
Overall	37	3.233	.212	.901
Internal Protective Factors	17	3.261	.202	.823
External Protective Factors	20	3.210	.221	.859

of 20 items ($\alpha = .859$), the overall FLARS consisted of 37 items ($\alpha = .901$) was found to be very highly reliable. Therefore, the items on the scale are highly correlated. Consequently, this result indicates that the scale is reliable.

Principal Component Analysis

Initially, the factorability of the 37 FLARS items was examined. Several well-recognized criteria for the factorability of a correlation were used. The Kaiser-Meyer-Olkin measure of sampling adequacy was .915, above the commonly recommended value of .6, and Bartlett’s test of sphericity was significant ($X^2(666) = 7351.246, p < .05$). Factor analysis was deemed suitable with all 37 items.

Based on the initial Eigenvalues, seven components have values of ≤ 1 . Thus, this suggests that there should have seven factors for the scale. However, the researcher followed the factor labels Kutlu and Yavuz (2016) proposed, the internal and external protective factors. Therefore, the final number of components or factors for the scale is two.

Table 6 shows the factor loadings based on a principal components analysis with varimax rotation for 37 items of the Filipino Learners’ Academic Resilience Scale (FLARS) (N = 218).

Based on the principal component analysis results, there were realigned items, but there were still 17 items loaded in factor 1 and 20 in factor 2.

Table 6: Factor structure of the Filipino Learners' Academic Resilience Scale (FLARS) (N =591)

Scale Items	Factor Loadings	
	Internal Protective Factor	External Protective Factor
1		.472
2		.341
3		.254
4		.333
5		.310
6		.356
7		.344
8	.574	
9	.598	
10	.501	
11	.502	
12		.567
13	.569	
14	.513	
15	.572	
16	.512	
17		.405
18	.746	
19	.704	
20	.777	
21	.684	
22	.665	
23	.359	
24		.361
25	.221	
26	.414	
27	.441	
28		.476
29		.504
30		.409
31		.544
32		.567
33		.628
34		.609
35	.626	
36	.555	
37	.576	

Note: Factor loadings < .2 are suppressed.

Moreover, all items were included, and no item was suppressed when the factor loadings were set to a .2 value. Overall, an approximately normal distribution was evident for the composite score data in the current study; thus, the data were well suited for parametric statistical analyses.

CONCLUSIONS AND RECOMMENDATIONS

After following these steps to construct the scale and after analyzing the data from the first and the last application by using adequate statistical methods, it has been concluded that:

1. The study has produced a scale measuring the academic resiliency of secondary school students when experiencing various adversities. This scale includes

37 items that measure two dimensions of academic resiliency: internal and external protective factors.

2. The scale has been validated through content and constructs validity. Experts evaluated the content validity, and factor analysis calculated construct validity. The principal component analysis was able to assign specific items to its component or factor. The Kaiser-Meyer-Olkin measure of sampling adequacy was .915, above the commonly recommended value of .6, and Bartlett's test of sphericity was significant ($X^2(666) = 7351.246$, $p < .05$). Factor analysis was deemed suitable with all 37 items. Thus, all items were included and retained at factor loadings of .2 value.

3. The reliability of the scale was evaluated by calculating Cronbach's alpha. The overall reliability coefficient value is above .901. Thus, the scale is very highly reliable. The reliability for each internal and external protective factor dimension of FLARS is .823 and .859, respectively. Still based on the findings of the study and the preceding conclusions, the researcher humbly recommends the following to the concerned individuals, groups, and Department of Education-affiliated institutions:

1. The researcher encourages future researchers to investigate the generalizability of the scale to a larger population. Likewise, if the situation gets better, all the data gathering procedures must be done face-to-face to ensure reliability in the data to be gathered.

2. The core of each statement made in the scale should be considered and incorporated into the curriculum or school programs so that learners can achieve academic resiliency.

3. Further studies should explore developing a similar scale for workers or students at the primary level.

Limitations

With any preliminary questionnaire, there were some limitations to its design. The limitations of this study consist of (1) possible lack of generalizability, (2) risk of using a self-reported measure, and (3) length of the questionnaire. Although the FLARS was designed for secondary school learners who experience adversities by rising from them, it may apply to college students or even the younger ones. Still, its generalizability to other populations is unknown and must be tested. Secondly, recall bias and integrity in the students' answers are risks since the survey was answered via Google forms. The questionnaire also takes about 15 to 20 minutes to complete. Furthermore, the number of items and length of each statement must be reviewed if it is going to be tested for younger learners.

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